

# PATENT COOPERATION TREATY

# PCT



## INTERNATIONAL PRELIMINARY EXAMINATION REPORT (PCT Article 36 and Rule 70)

26 JUL 2004

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| Applicant's or agent's file reference<br>P02001  | <b>FOR FURTHER ACTION</b> See Notification of Transmittal of International Preliminary Examination Report (Form PCT/PEA/416) |   |
| International application No.<br>PCT/NO 03/00048   | International filing date ( <i>day/month/year</i> )<br>07.02.2003  | Priority date ( <i>day/month/year</i> )<br>08.02.2002 |
| International Patent Classification (IPC) or both national classification and IPC<br>B60R19/34 |  |   |
| Applicant<br>NORSK HYDRO ASA et al.  |  |   |

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 7 sheets, including this cover sheet.  
  
☐ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).  
  
 These annexes consist of a total of    sheets.

3. This report contains indications relating to the following items:
  - I    ☒ Basis of the opinion
  - II   ☐ Priority
  - III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
  - IV   ☒ Lack of unity of invention
  - V    ☒ Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
  - VI   ☐ Certain documents cited
  - VII ☐ Certain defects in the international application
  - VIII ☐ Certain observations on the international application

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| Date of submission of the demand<br><br>28.08.2003  | Date of completion of this report<br><br>05.05.2004  |
| Name and mailing address of the international preliminary examining authority:<br><br> European Patent Office<br>D-80298 Munich<br>Tel. +49 89 2399 - 0 Tx: 523656 epmu d<br>Fax: +49 89 2399 - 4465 | Authorized Officer<br><br>Singer, G<br><br>Telephone No. +49 89 2399-8870<br><br> |

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT**

International application No. PCT/NO 03/00048

**I. Basis of the report**

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

**Description, Pages**

1-24 as published

**Claims, Numbers**

1-42 as published

**Drawings, Sheets**

1/10-10/10 as published

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).  
☐ the language of publication of the international application (under Rule 48.3(b)).  
☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.  
☐ filed together with the international application in computer readable form.  
☐ furnished subsequently to this Authority in written form.  
☐ furnished subsequently to this Authority in computer readable form.  
☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.  
☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:  
☐ the claims, Nos.:  
☐ the drawings, sheets:

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT**

International application No. **PCT/NO 03/00048**

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

*(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to the report.)*

6. Additional observations, if necessary:

**IV. Lack of unity of invention**

1. In response to the invitation to restrict or pay additional fees, the applicant has:

- ☐ restricted the claims.  
☐ paid additional fees.  
☐ paid additional fees under protest.  
☐ neither restricted nor paid additional fees.

2. ☐ This Authority found that the requirement of unity of invention is not complied with and chose, according to Rule 68.1, not to invite the applicant to restrict or pay additional fees.

3. This Authority considers that the requirement of unity of invention in accordance with Rules 13.1, 13.2 and 13.3 is

- ☐ complied with.  
☒ not complied with for the following reasons:

**see separate sheet**

4. Consequently, the following parts of the international application were the subject of international preliminary examination in establishing this report:

- ☒ all parts.  
☐ the parts relating to claims Nos. .

**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1. Statement

|                               |             |                  |
|-------------------------------|-------------|------------------|
| Novelty (N)                   | Yes: Claims | 25 - 27          |
|                               | No: Claims  | 29 - 37, 39 - 42 |
| Inventive step (IS)           | Yes: Claims | 25 - 27          |
|                               | No: Claims  | 1 - 24, 28, 38   |
| Industrial applicability (IA) | Yes: Claims | 1 - 42           |
|                               | No: Claims  |                  |

2. Citations and explanations

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT**

International application No. PCT/NO 03/00048

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see separate sheet

**Re Item IV**

**Lack of unity of invention**

This Authority considers that there are two inventions covered by the claims indicated as follows:

- I: Claims 1 to 28, 29 and 30 directed to a calculation method of determining a heat treatment to apply to a structural member and a computer program to perform the method.
- II: Claims 31 to 41 directed to an impact protection member

The reasons for which the inventions are not so linked as to form a single general inventive concept, as required by Rule 13.1 PCT, are the following: a technical relationship involving one or more of the same or corresponding special technical features in the sense of Rule 13.2 PCT does not exist between the method of the claims of group I and the impact protection member of group II. The heat treatment of the impact protection member of group II is not necessarily defined and determined by the method of the claims of group I.

In conclusion, the two groups of claims are not linked by common or corresponding special technical features and define therefore different inventions not linked by a single general inventive concept.

The application, hence does not meet the requirements of unity of invention as defined in Rules 13.1 and 13.2 PCT.

**Re Item V**

**Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1. It is common knowledge in the art to modify the deformation behaviour of structural members such as energy absorbing structures (WO-A-91/14110, D2), frame members for vehicles (US-A-3,983,962, D3), or steering columns (EP-A-709 274, D4) by applying a heat treatment to at least part of the structural member.

It is also usual in the developing process of such structural members and for the

certification process of the members before the regulatory authority to simulate the deformation behaviour of such members when subjected to an applied load or stress by calculations done normally using a numerical modelling method (see EP-A-978 444, D1, page 2, lines 9 to 16 and lines 48 to 53).

The method described in document D1 provides the same advantages and provisions as the method in the present application. The skilled person would therefore regard it as a normal option to simulate in an analogous manner the effect of at least one heat treatment upon the at least part of the structural member so as to determine the heat treatment to apply to the at least part of the structural member as disclosed in D2 to D4 to produce the modified deformation behaviour described in D2 to D4.

The method for programming a computer to determine a heat treatment to apply to a structural member as proposed in claim 1 of the present application can not be considered as involving an inventive step (Article 33(3) PCT), because it would be obvious to the person skilled in the art (stress engineer), to apply a method, similar to this of D1 and adapted to the specific problem of D2 with corresponding effect and thereby arriving at a method according to claim 1.

In dependent claims 2 to 22 are defined particular features of the method of claim 1, which come within the scope of the customary practice followed by persons skilled in the art who are in charge of the calculations in a development process (stress engineer), especially as the advantages thus achieved can readily be foreseen. Consequently, the subject-matter of these claims also lacks an inventive step.

The features of the dependent claims 22 to 24, 27 and 28 relate to the structural member itself and are not features of the method of determining a heat treatment according to the previous claims.

2. Computer programs according to claims 29 and 30 comprising code means adapted to calculate heat transfer and structural behaviour problems due to heat application are numerous available (see for example NASTRAN from the McNeal Schwendler Corp.) and are not new in the sense of Article 33(2) PCT.

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT - SEPARATE SHEET**

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International application No. PCT/NO03/00048

3. An impact protection member as claimed in claims 31 to 37 and 39 to 42 are known from document D3 or D4, while the feature of claim 38 does not involve an inventive step with respect to D2 in combination with D3 or D4.
5. In summary, the present application does not meet the requirements of Article 33(2) PCT, because the subject-matter of independent claims 29 and 31 is not new and the method of claim 1 does not involve an inventive step (Article 33(3) PCT).
6. The features of claims 25 to 27 which seem to reflect the in line modification method with continuous simulation and adjustment of the mechanical properties of the components during production as described on page 19 and 20 of the description seem to describe a solution to the problem defined on page 19 of the present application. The requirement of novelty seems to be fulfilled for these claims, because none of the prior art documents cited in the International Search Report discloses these features and they seem not to be suggested by the cited documents either .
7. The requirement of industrial applicability is fulfilled since the claimed method and the impact protection member can be used for example in vehicles.